

JC922 U.S. PTO
09/05/00

09-07-00

A
PATENT APPLICATION
Attorney's Do. No. 6647-15

JC905 U.S. PTO
09/05/00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

EXPRESS MAIL

MAILING LABEL NO. EL532247242US
DATE OF DEPOSIT: SEPTEMBER 5, 2000

I HEREBY CERTIFY THAT THIS PAPER AND ENCLOSURES AND/OR FEE ARE BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE "EXPRESS MAIL POST OFFICE TO ADDRESSEE" SERVICE UNDER 37 CFR 1.10 ON THE DATE INDICATED ABOVE AND IS ADDRESSED TO: BOX PATENT APPLICATION, ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON D.C. 20231.

Melissa C. Smith
(SENDER'S PRINTED NAME)

Melissa C. Smith
(SIGNATURE)

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

Enclosed for filing is a patent application under 37 CFR 1.53(b) of:

Inventors[or Application Identifier]: Stephen R. Carter and Delos C. Jensen
For: INTENTIONAL STANCE CHARACTERIZATION OF A GENERAL CONTENT STREAM OF REPOSITORY

[If continuing application] This application is a continuation, divisional, continuation-in-part of prior application Serial No. _____.

Enclosures:

- Specification (pages 1-10); claims (pages 11-15); abstract (page 16)
- 13 sheet(s) of drawings
- Declaration or Combined Declaration and Power of Attorney
 - Newly executed (original or copy)
 - Copy from a prior application (37 CFR 1.63(d))
 - Incorporation by Reference--The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
- Deletion of Inventors (signed statement attached deleting inventor(s) named in the prior application (37 CFR 1.63(d)(2) and 1.33(b))
- Power of Attorney
- Assignment with cover sheet

- Certified copy of priority document:
 Information Disclosure Statement with Form PTO 1449
 Copies of references listed on attached Form PTO-1449
 Preliminary Amendment
 Change of Address

<u>CLAIMS AS FILED</u>				
For	Number Filed	Number Extra	Rate	Basic Fee
Total Claims	24-20	4	x \$ 18 =	\$690.00 72.00
Independent Claims	6-3	3	x \$ 78 =	234.00
Multiple Dependent Claim Fee			x \$260 =	0.00
TOTAL FILING FEE				\$996.00

- Cancel in this divisional application original claims _____ of the prior application Serial No. _____ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
- A check in the amount of \$1,036.00 to cover filing fee and assignment recordal fee (\$40) is enclosed.
- Any deficiency or overpayment should be charged or credited to deposit account number 13-1703. A duplicate copy of this sheet is enclosed.

Customer No. 20575

Respectfully submitted,

MARGER JOHNSON & McCOLLOM, P.C.



Ariel Rogson
Reg. No. 43,054

MARGER JOHNSON & McCOLLOM, P.C.
1030 S.W. Morrison Street
Portland, Oregon 97205
(503) 222-3613

5 **INTENTIONAL-STANCE CHARACTERIZATION OF A GENERAL CONTENT
STREAM OR REPOSITORY**

RELATED APPLICATION DATA

This application is related to U.S. Patent No. 6,108,619, issued August 22, 2000, titled
10 "METHOD AND APPARATUS FOR SEMANTIC CHARACTERIZATION," co-pending
U.S. Patent application Serial No. 09/512,963, titled "CONSTRUCTION, MANIPULATION,
AND COMPARISON OF A MULTI-DIMENSIONAL SEMANTIC SPACE," filed February
25, 2000, and to co-pending U.S. Patent application Serial No. _____, titled "A
METHOD AND MECHANISM FOR THE CREATION, MAINTENANCE, AND
15 COMPARISON OF SEMANTIC ABSTRACTS," filed _____, all commonly assigned.

FIELD OF THE INVENTION

This invention pertains to determining in a computer the semantic content of
documents, and more particularly to determining and responding to the emotional content of
20 the documents.

BACKGROUND OF THE INVENTION

U.S. Patent applications Serial No. 09/109,804, titled "METHOD AND
APPARATUS FOR SEMANTIC CHARACTERIZATION," filed July 2, 1998, U.S. Patent
25 application Serial No. 09/512,963, titled "CONSTRUCTION, MANIPULATION, AND
COMPARISON OF A MULTI-DIMENSIONAL SEMANTIC SPACE," filed February 25,
2000, and U.S. Patent application Serial No. _____, titled "A METHOD AND
MECHANISM FOR THE CREATION, MAINTENANCE, AND COMPARISON OF
30 SEMANTIC ABSTRACTS," filed _____ provide a framework and mechanism in a
computer for providing a "quantized" meaning-representation. But the semantic meaning of
documents is not the only factor controlling interpretation of the documents. People have
emotional responses to the world around them. What one person might view with emotional
detachment can cause another person to respond strongly. Even more, people can have
different emotional responses to the same content, depending on their point of view. For

example, given an article proposing abortion regulation, many people would vehemently oppose the regulation, while others would avidly support it. Currently, however, no mechanism exists to enable users to automate the process of identifying and responding to documents or other content to which the users have an emotional response.

- 5 The present invention addresses these and other problems associated with the prior art.

SUMMARY OF THE INVENTION

The invention is a computer-implemented method and apparatus for building a template specifying an emotional response to a content stream. A dictionary is selected. The dictionary includes concepts organized as a directed set and chains overlaid on top of the concepts. A subset of the chains are selected as intentional stance basis chains (ISBCs). State vectors are constructed in a topological vector space for a subset of the concepts in the dictionary. The state vectors are assembled into a template, and an action and threshold distance are assigned to, or associated with, the template. As content becomes available, impact summaries of the content are compared with the template. If the impact summary is within the threshold distance of the template, the action is performed.

The invention enables a computer to determine whether a content stream provokes an emotional response. A template is constructed in a topological vector space as described above. An impact summary is constructed or generated for the content stream, and is compared with the template. The comparison can be made by measuring a distance between the impact summary and the template in the topological vector space.

The foregoing and other features, objects, and advantages of the invention will become more readily apparent from the following detailed description, which proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a computer system on which the invention can operate to create templates and impact summaries for content streams.

30 FIG. 2 shows a dictionary including concepts over which chains have been laid, from which intentional stance basis chains can be selected.

FIGs. 3A-3G show eight different intentional stance basis chains in the dictionary of FIG. 2.

FIG. 4 shows a two-dimensional topological vector space in which a template is presented.

FIG. 5 shows a two-dimensional topological vector space in which the emotional impact of a document is determined by measuring the distance between an impact summary 5 for the document and a template.

FIG. 6 shows a flowchart of a method to construct it a template in the computer system of FIG. 1 according to the preferred embodiment of the invention.

FIG. 7 shows a flowchart of a method to analyze a content stream in the computer system of FIG. 1 to determine if an emotional response is required.

10

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Introduction to Templates

U.S. Patent application Serial No. 09/512,963, titled “CONSTRUCTION, MANIPULATION, AND COMPARISON OF A MULTI-DIMENSIONAL SEMANTIC SPACE,” filed February 25, 2000, incorporated by reference herein and referred to as “the Construction application,” describes the creation of state vectors in a topological vector space for concepts in a dictionary. U.S. Patent application Serial No. _____, titled “A METHOD AND MECHANISM FOR THE CREATION, MAINTENANCE, AND COMPARISON OF SEMANTIC ABSTRACTS,” filed _____, incorporated by reference herein and referred to as “the Semantic Abstracts application,” takes state vectors for individual lexemes/lexeme phrases and assembles them into semantic abstracts for documents.

The techniques used in the Semantic Abstracts application can be applied to building intentional stance impact templates (or “templates” for short). Instead of working with an abstract of a document, however, the template begins with an abstract of content to which the user would have an emotional response. For example, an anti-abortion activist might select 25 the phrase “The doctor aborted the fetus” as an abstract of content to which he has an emotional response. The abstract is then parsed into its constituent lexemes/lexeme phrases, and each lexeme/lexeme phrase is mapped to a state vector in a topological vector space. The 30 state vectors are collected to form the template, and an action is assigned to the template. For example, the anti-abortion activist might assign as an action to the template to send a letter to each of his representatives in Congress. (Although example uses of the invention will be presented using textual documents, a person skilled in the art will recognize that the invention

is equally applicable to non-textual works. For example, images or music can provoke emotional responses in people just as strongly as written words.)

Alternatively, the hypothetical anti-abortion activist could be reading an electronic version of a report. Upon encountering a paragraph that the activist finds incendiary, the activist can mark the paragraph. The paragraph can be semantically analyzed and disassembled into its component lexemes/lexeme phrases. Vectors can be created from the lexemes/lexeme phrases. If necessary, the vectors can be filtered. Then the filtered vectors can be assembled into a template, and an action assigned to the template. In this manner, the template can be created without the activist having to summarize the material.

A reader familiar with the Semantic Abstracts application will observe that templates have similarities with semantic abstracts. Both represent distilled content. Both include sets of state vectors in topological vector spaces. But whereas semantic abstracts are associated with particular documents, templates are not linked to any particular document.

Systems for Building and Using Templates

Now that the reader is familiar with the high-level design goals of templates, the techniques of constructing and using templates can be explained in greater detail. FIG. 1 shows a computer system 105 on which a method and apparatus for using a multi-dimensional semantic space can operate. Computer system 105 conventionally includes a computer 110, a monitor 115, a keyboard 120, and a mouse 125. Computer system 105 can also be an Internet appliance, lacking monitor 115, keyboard 120, or mouse 125. Optional equipment not shown in FIG. 1 can include a printer and other input/output devices. Also not shown in FIG. 1 are the conventional internal components of computer system 105: e.g., a central processing unit, memory, file system, etc.

Computer system 105 further includes software 130. In FIG. 1, software 130 includes dictionary 135, intentional stance basis chains (ISBCs) 140, template 145, action 150, and comparison software 155. Dictionary 135 provides the foundation for the topological vector space used to construct the template. FIG. 2 shows a sample dictionary 135 including concepts and chains. (Dictionary 135 shown in FIG. 2 is drawn from the Construction application.) Dictionary 135 includes a set of concepts, typically organized as a directed set. At the top of the directed set is a particular concept known as the maximal element. For each concept in the directed set other than the maximal element, there is at least one “parent” concept in the directed set that is a generalization of that concept. (There can be multiple

“parent” concepts, because language allows for overloading of words.) The relationships between concepts can be extended all the way to the maximal element; the hierarchy of such relationships between the maximal element and each concept are called chains.

- ISBCs 140 are a selected subset of the chains in dictionary 135. For example, FIGs. 5 3A-7G show eight different chains in the dictionary of FIG. 2 that can be selected as ISBCs 140. FIG. 3A shows chain 305, which extends to concept “man” through concept “energy.” FIG. 3B shows chain 310 extending to concept “iguana.” FIG. 3C shows another chain 315 extending to concept “man” via a different path. FIGs. 3D-3G show other chains.

Returning to FIG. 1, ISBCs 140 play the same role in building state vectors for 10 templates that the basis chains play in creating state vectors in the Construction application. Any desired set of ISBCs can be selected from the chains in dictionary 135. Although comparing a template with an impact summary requires that the template and impact summary be constructed using the same selected chains, topological vector space transformations can be performed to allow comparison. One of the impact summary and the 15 template can be transformed to use the other’s basis chains, or both can be transformed to a normative, preferred dictionary/basis combination.

Once ISBCs 140 have been selected, the lexemes/lexeme phrases chosen to create the template are mapped to state vectors in a topological vector space. These state vectors are then assembled into template 145. Action 150 representing the user’s desired response is 20 assigned to template 145. Finally, comparison software 155 is used to compare template 145 with an impact summary for the content in question. If necessary, comparison software 155 can construct an impact summary for the content.

Although the content compared with template 145 can be found stored on computer system 105, this is not required. FIG. 1 shows computer system 105 accessing a content 25 stream 160 over network connection 165. Content stream 160 can be a single document, or it can include multiple sources. Content streams with multiple sources are common in today’s world. For example, newsgroups and discussion lists (e-mail lists) allow multiple users to carry on several conversations on multiple topics at the same time. Newsgroups and discussion lists are typically organized into a hierarchy. The newsgroup itself has a content 30 focus. This content focus is divided into sub-topics, called threads. Each thread is further divided into individual messages from individual users. FIG. 1 shows content stream 160 as having two threads. Thread one has two messages, and thread two has three messages.

Depending on the level of abstraction the user wishes to track, the template can be compared with different impact summaries. For example, a user may have an emotional reaction to the entire content stream, without looking at individual messages within the content stream (e.g., an entire newsgroup devoted to support of abortion). Alternatively, the 5 user might have a reaction to only a thread within the newsgroup (e.g., a thread about abortion within a medical newsgroup), or to only an individual message.

Network connection 165 can include any kind of network connection. For example, network connection 165 can enable computer system 105 to access content stream 160 over a local area network (LAN), a wide area network (WAN), a global internetwork, a wireless 10 network or broadcast network, or any other type of network. Similarly, once collected, the impact summary can be stored somewhere on computer system 105, or can be stored elsewhere using network connection 165.

Using Templates

FIG. 4 shows a two-dimensional topological vector space in which a template includes a set of state vectors. (FIGs. 4 and 5, although accurate representations of a topological vector space, are greatly simplified for example purposes, since most topological vector spaces will have significantly higher dimensions.) In FIG. 4, template 405 includes the state vectors represented by the “x” symbols. (For clarity, the line segments from the 20 origin of the topological vector space to the heads of the state vectors are not shown in FIG. 4.)

Circle 410 represents the threshold distance defined for template 405 before an action is taken. The reader will recognize that circle 410 is an abstraction, since in the preferred embodiment distance is not measured from a single point in the topological vector space.

Instead, in the preferred embodiment distance is measured from the entire set of vectors comprising the template. But if template 405 could be reduced to a single point in the topological vector space, circle 410 could represent a threshold distance. Any impact summaries that came within circle 410 would then trigger the action associated with template 405.

Although in the preferred embodiment the template includes only one associated action and one threshold distance, a user may have different emotional responses depending on how close the content source gets to the template. For example, an anti-abortion activist might find a theoretical discussion about the benefits of abortion merely unsettling and worth

only paying closer attention (say, having follow-up articles e-mailed to his attention). An article reporting an abortion performed by a doctor might make the activist feel quite unhappy (prompting a letter to his congressperson). And a report about pending legislation to keep abortion legal might make the activist very angry (and cause him to start circulating a

- 5 petition to prevent the legislation). The activist might then set up a number of different actions depending on how close the content source gets to the template, and associate different threshold distances to each action. Circle 415 represents such a second threshold distance associated with a different action for the template.

10 *The Hausdorff Distance Function*

As template 405 consists of a set of vectors, the preferred embodiment for measuring distance from template 405 to an impact summary is via the Hausdorff distance function.

The following is excerpted from the Construction and Semantic Abstracts applications.

- Recall that in the Construction application it was shown that $\mathcal{H}(\mathbf{S})$ is the set of all
15 compact (non-empty) subsets of a metrizable space \mathbf{S} . The Hausdorff distance h is defined as follows: Define the pseudo-distance $\xi(x, u)$ between the point $x \in \mathbf{S}$ and the set $u \in \mathcal{H}(\mathbf{S})$ as

$$\xi(x, u) = \min \{d(x, y) : y \in u\}.$$

Using ξ define another pseudo-distance $\lambda(u, v)$ from the set $u \in \mathcal{H}(\mathbf{S})$ to the set
 $v \in \mathcal{H}(\mathbf{S})$:

20
$$\lambda(u, v) = \max \{\xi(x, v) : x \in u\}.$$

Note that in general it is *not* true that $\lambda(u, v) = \lambda(v, u)$. Finally, define the distance $h(u, v)$ between the two sets $u, v \in \mathcal{H}(\mathbf{S})$ as

$$h(u, v) = \max \{\lambda(u, v), \lambda(v, u)\}.$$

The distance function h is called the *Hausdorff* distance. Note that

25
$$h(u, v) = h(v, u),$$

$$0 < h(u, v) < \infty \text{ for all } u, v \in \mathcal{H}(\mathbf{S}), u \neq v,$$

$$h(u, u) = 0 \text{ for all } u \in \mathcal{H}(\mathbf{S}), \text{ and}$$

$$h(u, v) \leq h(u, w) + h(w, v) \text{ for all } u, v, w \in \mathcal{H}(\mathbf{S}).$$

Alternatives to the Hausdorff Distance Function

In the Semantic Abstracts application, one alternative to using the Hausdorff distance function was to locate a centroid vector for the semantic abstract. The same techniques are applicable to templates. By locating a centroid vector (using any measure of central tendency) for the template, distance functions that depend on single points (e.g., Euclidean distance) can be used to measure distance from the template to the impact summary.

Measuring Distance from the Template

FIG. 5 shows a two-dimensional topological vector space in which template 405 is compared with an impact summary for a document. (To avoid clutter in the drawing, FIG. 5 shows template 405 and impact summary 505 in different graphs of the same topological vector space. The reader can imagine the template and impact summary as being in the same graph.) Using the Hausdorff distance function h , the distance 510 between template 405 and impact summary 505 can be quantified. If distance 510 is smaller than the threshold distance defined for template 405, then the action associated with template 405 will be triggered.

Procedural Implementation

FIG. 6 shows a flowchart of a method to construct a template in the computer system of FIG. 1 according to the preferred embodiment of the invention. At step 605, a dictionary (a directed set of concepts and chains) is selected. At step 610, a subset of the chains in the dictionary is selected as ISBCs. Any dictionary can and basis chains can be used, but one dictionary/basis combination might be preferred over another, for example, because it would avoid requiring a topological vector space transformation. At step 615, the concepts (lexemes/lexeme phrases) in the dictionary that generate an emotional response are selected. The concepts are typically selected based on trigger concepts, often in phrases that make sense to the reader (for example, “doctors performing abortions at clinics”). At step 620, state vectors are constructed for the selected concepts. The ISBCs are used to construct the state vectors. At step 625, the state vectors are assembled (collected into a set) to form the template. Finally, at step 630, an action and threshold distance are assigned to the template.

FIG. 7 shows a flowchart of a method to analyze a content stream in the computer system of FIG. 1 to determine if an emotional response is triggered. At step 705, an impact summary is constructed for the content stream. At step 710, the distance from the impact summary to the template is measured. At step 715, the distance is checked against the

threshold for taking the action associated with the template. If the distance indicates that the impact summary is within the threshold for taking action associated with the template, then at step 720 the action is performed.

5 *Monitoring Changes in Content*

Although the above description treats content as a static object, it is not. Content changes over time. For example, returning to the example of the newsgroup, threads die out as users stop posting new messages regarding the thread or moderators kill improper threads. New threads pop up as new subjects are proposed. People's viewpoints change as one argument or another sways them. As content changes, the need for action can accordingly change. For example, if the newsgroup is about medicine, the above-described anti-abortion activist might originally have no emotional response one way or the other to the newsgroup. But when a thread on the subject of abortion appears, the activist's interest increases. And as people start posting messages supporting abortion, the activist begins to take action.

10 Accordingly, the user needs to update impact summaries to make sure the impact summary is current. In FIG. 7, dashed line 725 reflects this need. Periodically, the system starts over at step 705 to determine the current content of the source.

15

A Benefit of Templates

20 One use of the intentional stance impact template is for authors to try and gauge how their works will be received. An author can construct a template he expects his readers to use in reviewing the work. The author can then apply the template to the work and see how close the work comes to the template. For example, if the work discusses the medical benefits of abortion, the author can construct a template that an anti-abortion activist might use, and see

25 how close the article comes to the template. This allows the author to estimate how others might respond to the work. The author can then further refine the work if the provoked response is not as desired.

Another example of how templates can be used is illustrated in related co-pending U.S. Patent Application Serial No. _____, entitled "POLICY ENFORCEMENT

30 USING THE SEMANTIC CHARACTERIZATION OF TRAFFIC," filed simultaneously herewith.

Having illustrated and described the principles of our invention in a preferred embodiment thereof, it should be readily apparent to those skilled in the art that the invention

can be modified in arrangement and detail without departing from such principles. We claim all modifications coming within the spirit and scope of the accompanying claims.

CONFIDENTIAL - ATTORNEY'S EYES ONLY

We claim:

1. A computer-implemented method for building a template specifying an emotional response to a content stream, the method comprising:
 - selecting a dictionary, the dictionary including a plurality of concepts, one concept identified as a maximal element, and a plurality of chains connecting the maximal element to each concept in the directed set;
 - selecting a set of intentional stance basis chains to form a basis;
 - selecting at least one concept in the dictionary;
 - creating a state vector in a topological vector space for each selected concept, wherein each state vector includes as at least one measure of how concretely the concept is represented in each chain in the basis; and
 - assembling the state vectors into a template; and
 - associating an action with the template.
- 15 2. A method according to claim 1, wherein associating an action includes assigning a threshold distance to the action so that the action will be performed when the content stream is within the threshold distance of the template.
- 20 3. A method according to claim 2, wherein:
 - associating an action includes associating a plurality of actions with the template; and
 - assigning a threshold distance includes assigning a unique threshold distance to each action so that the action will be performed when the content stream is within the assigned threshold distance of the template.
- 25 4. A method according to claim 1, wherein assigning an action includes assigning a plurality of actions to be performed when the content stream is within one of a plurality of threshold distances of the template, each action to be performed when the content stream is within a unique range of distances of the template.
- 30 5. A method according to claim 1, the method further comprising constructing a centroid vector for the template from the state vectors.

6. A computer-implemented method for comparing a template with a content stream to determine whether the content stream provokes an emotion response, the method comprising:

- constructing the template in a topological vector space, the template including an
5 associated action and threshold distance;
constructing an impact summary for the content stream; and
comparing the impact summary with the template.

7. A method according to claim 6, wherein comparing the impact summary with
10 the template includes measuring a distance between the impact summary and the template.

8. A method according to claim 7, wherein measuring a distance includes
performing a topological vector space transformation on the impact summary.

15 9. A method according to claim 7, the method further comprising performing the
action associated with the template if the distance between the impact summary and the
template is less than the threshold distance of the template.

10. A method according to claim 7, wherein measuring a distance includes
20 locating a centroid vector for each of the template and the impact summary.

11. A method according to claim 10, wherein measuring a distance further
includes measuring an angle between the template centroid vector and the impact summary
centroid vector.

25 12. A method according to claim 7, wherein measuring a distance includes
measuring a Hausdorff distance between the impact summary and the template.

13. A method according to claim 6, wherein constructing an impact summary
30 includes iteratively constructing the impact summary for the content stream to track changes
in the content stream.

- 00000000000000000000000000000000
14. An apparatus for building a template specifying an emotional response to a content stream, the apparatus comprising:
- a computer;
 - a directed set stored in the computer including a plurality of concepts, one concept identified as a maximal element, and a plurality of chains stored extending from the maximal element to each concept;
 - an intentional stance basis including a subset of the plurality of chains;
 - for selected concepts in the directed set, a state vector in a topological vector space, wherein each state vector includes at least one measure of how concretely the concept is represented in each chain in the intentional stance basis;
 - a template including the state vectors; and
 - an action associated with the template.
15. An apparatus according to claim 14, the apparatus further including:
- a threshold distance for the template; and
 - means for performing the action associated with the template when an impact summary of the content stream is within the threshold distance of the template.
16. An apparatus according to claim 15, wherein:
- the threshold distance includes a plurality of threshold distances for the template;
 - the action includes a plurality of actions associated with the template; and
 - the means for performing the action includes means for performing one of the plurality of actions when the impact summary of the content stream is within one of the threshold distances of the template.
17. An apparatus for comparing a template with a content stream to determine whether the content stream provokes an emotion response, the apparatus comprising:
- a computer having access to the content stream;
 - a template in a topological vector space stored in the computer, the template including an associated action and a threshold distance;
 - means for capturing an impact summary for the content stream; and
 - means for comparing the impact summary with the template.

18. An apparatus according to claim 17, wherein the means for comparing the impact summary with the template includes means for measuring a distance between the impact summary and the template.

5 19. An apparatus according to claim 18, wherein:
the template includes a template centroid vector located from the state vectors; and
the impact summary includes an impact summary centroid vector.

10 20. An apparatus according to claim 19, wherein the means for measuring a distance between the impact summary and the template includes means for measuring a Euclidean distance between the impact summary and the template.

15 21. An apparatus according to claim 18, the apparatus further comprising means for performing the action associated with the template if the distance between the impact summary and the template is less than the threshold distance of the template.

20 22. An apparatus according to claim 17, wherein:
the impact summary uses a basis including a second subset of the plurality of vectors;
and
the apparatus includes a transformer for performing a topological vector space transformation on the impact summary.

25 23. A computer-readable medium containing a program operable on a computer to build a template specifying an emotional response to a content stream, the program comprising:

selection software to select a dictionary, the dictionary including a plurality of concepts, one concept identified as a maximal element, and a plurality of chains connecting the maximal element to each concept in the directed set;
selection software to select a set of intentional stance basis chains to form a basis;
30 selection software to select at least one concept in the dictionary;
creation software to create a state vector in a topological vector space for each selected concept, wherein each state vector includes as its components measures of how concretely the concept is represented in each chain in the basis; and

assembly software to assemble the state vectors into a template; and
association software to associate an action with the template.

24. A computer-readable medium containing a program operable on a computer to
5 compare a template with a content stream to determine whether the content stream provokes
an emotion response, the method comprising:

construction software to construct the template in a topological vector space, the
template including an associated action and threshold distance;

construction software to construct an impact summary for the content stream; and
10 comparison software to compare the impact summary with the template.

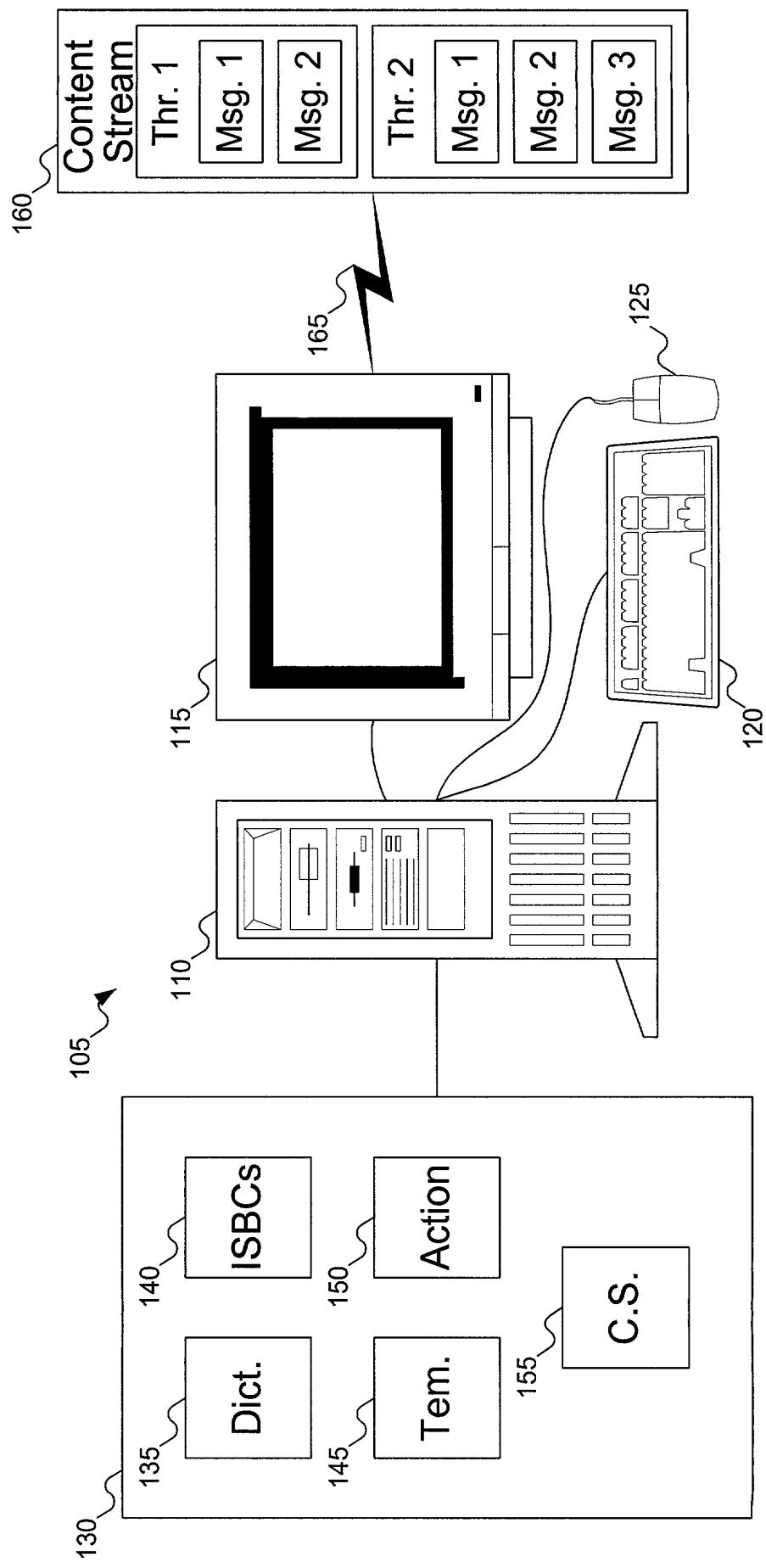
**INTENTIONAL-STANCE CHARACTERIZATION OF A GENERAL CONTENT
STREAM OR REPOSITORY**

ABSTRACT

5 Starting with a dictionary including concepts and chains, a subset of the chains is selected as intentional stance basis chains (ISBCs). Concepts in the dictionary are chosen and mapped to state vectors using the ISBCs. The state vectors are assembled into a template, and an action and threshold distance are assigned to the template. When an impact summary is generated for a content source, the distance between the impact summary and the
10 template is measured. If the distance is less than the threshold distance associated with the action for the template, the action is performed.

DRAFT - NOT FOR FILING

FIG. 1



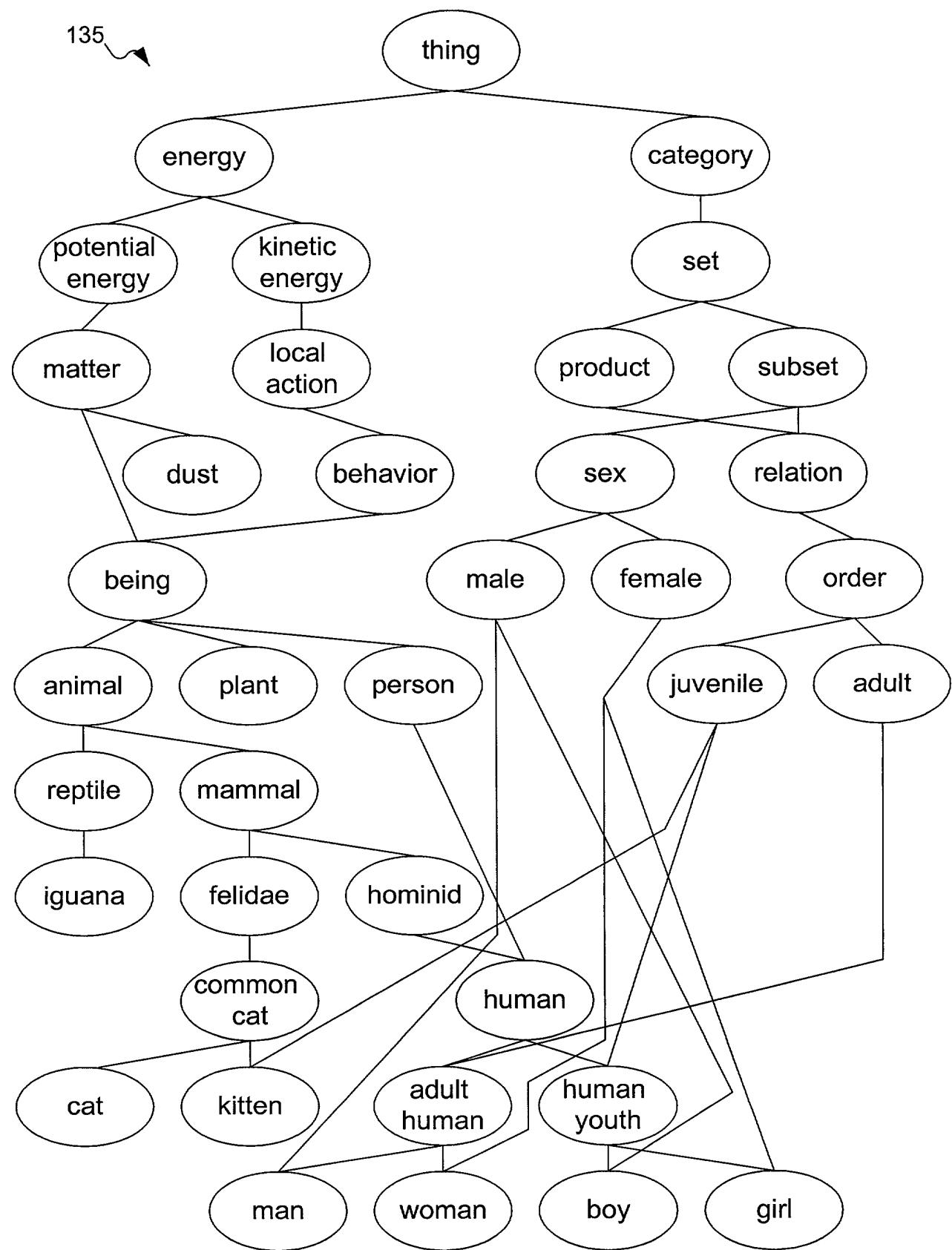


FIG. 2

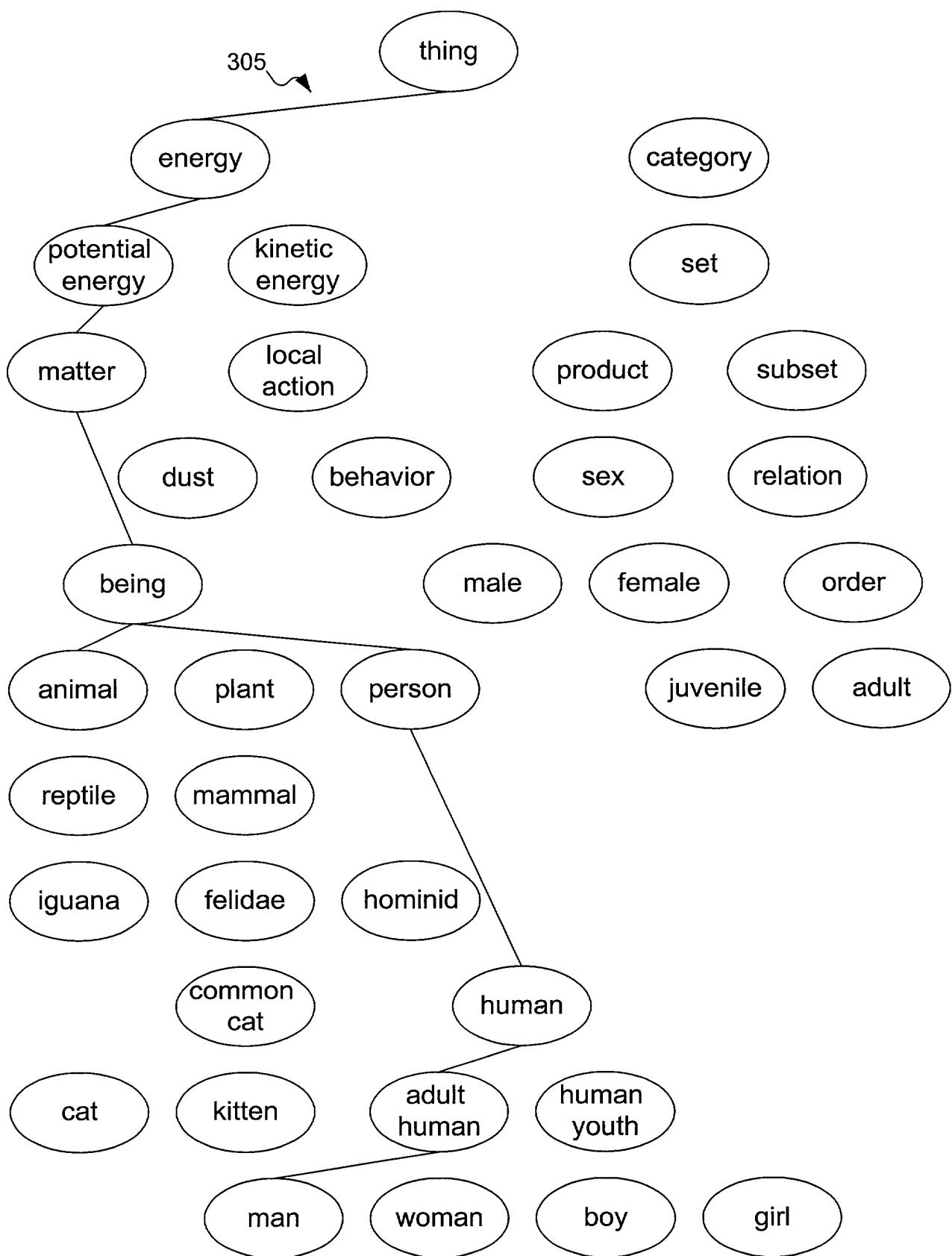


FIG. 3A

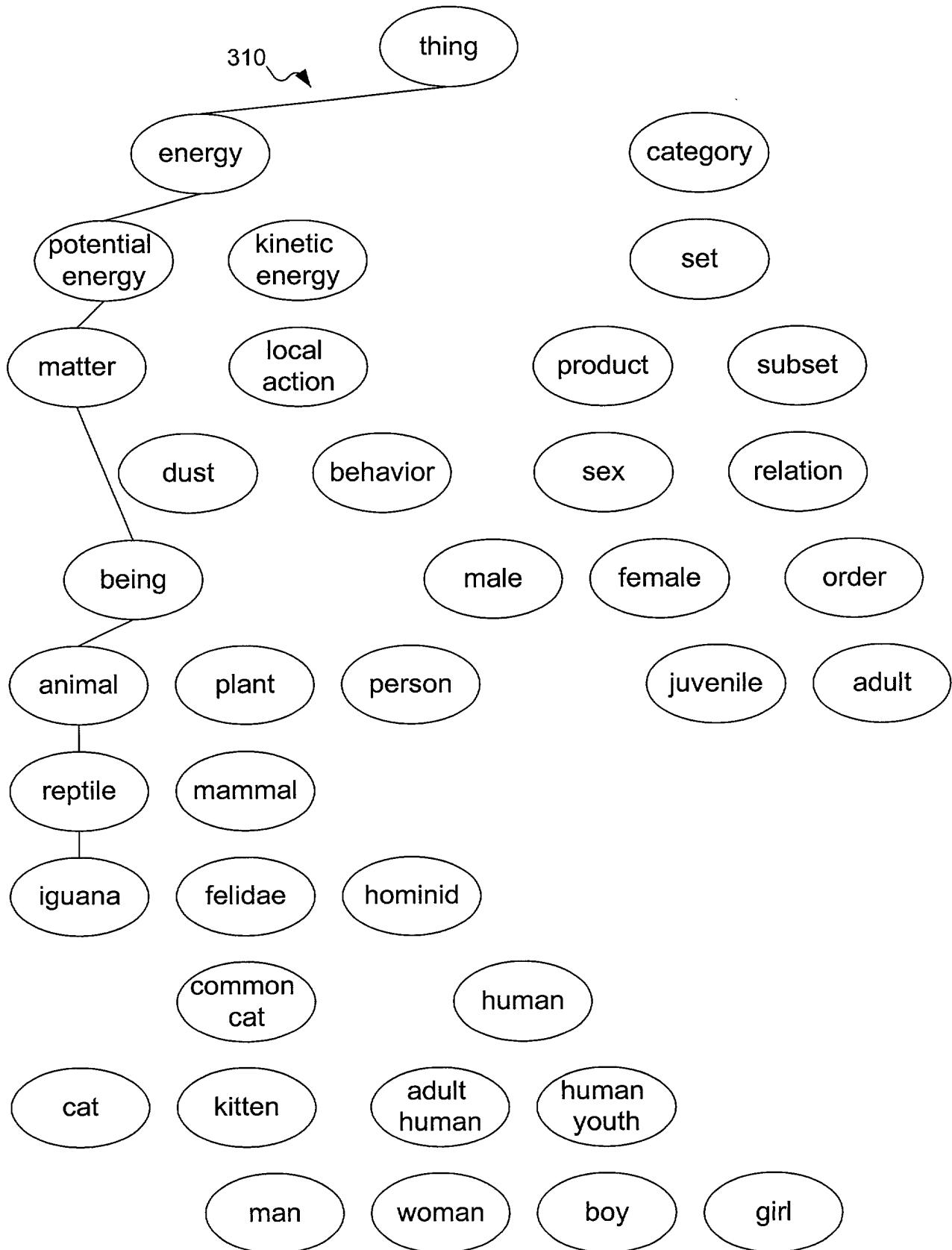


FIG. 3B

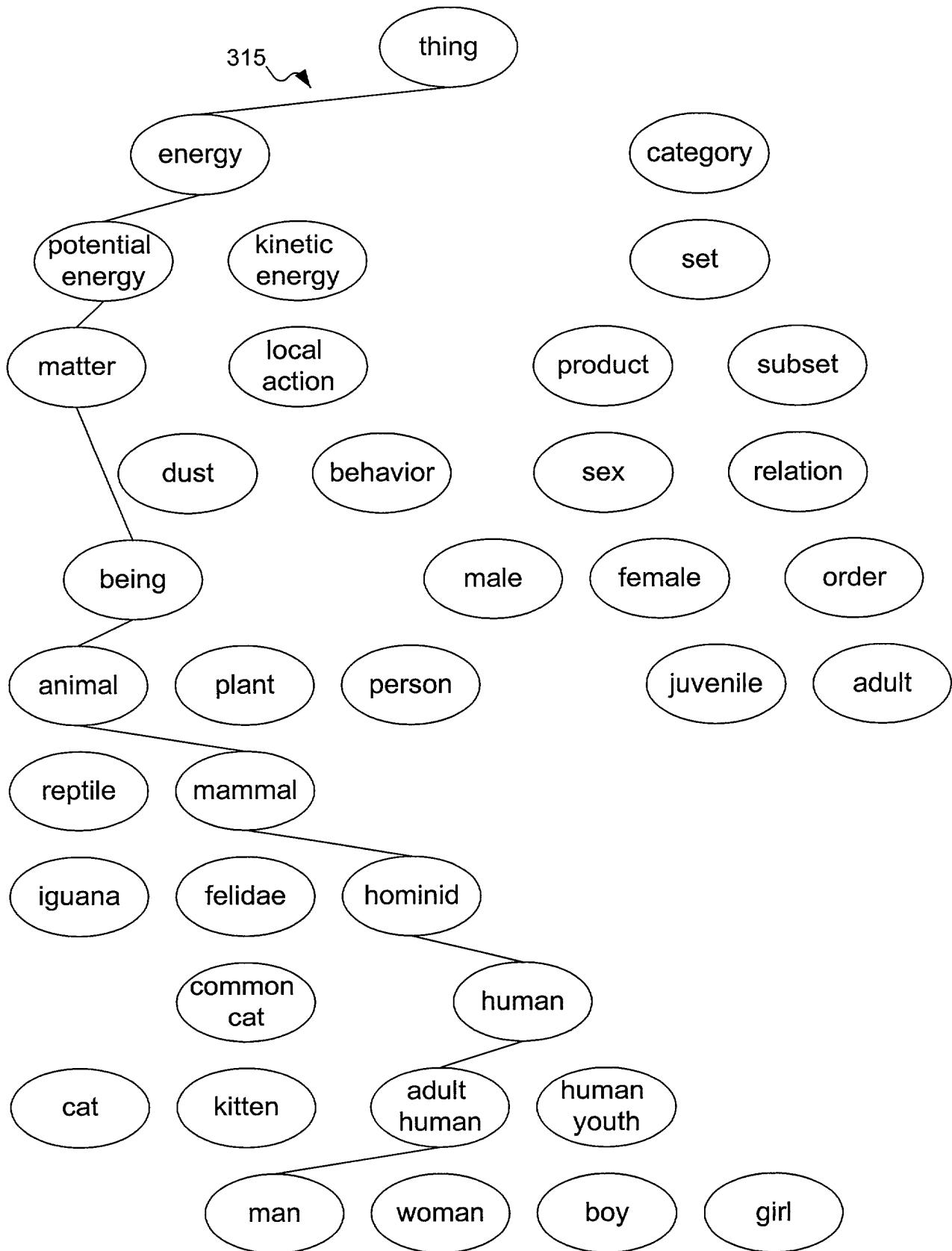


FIG. 3C

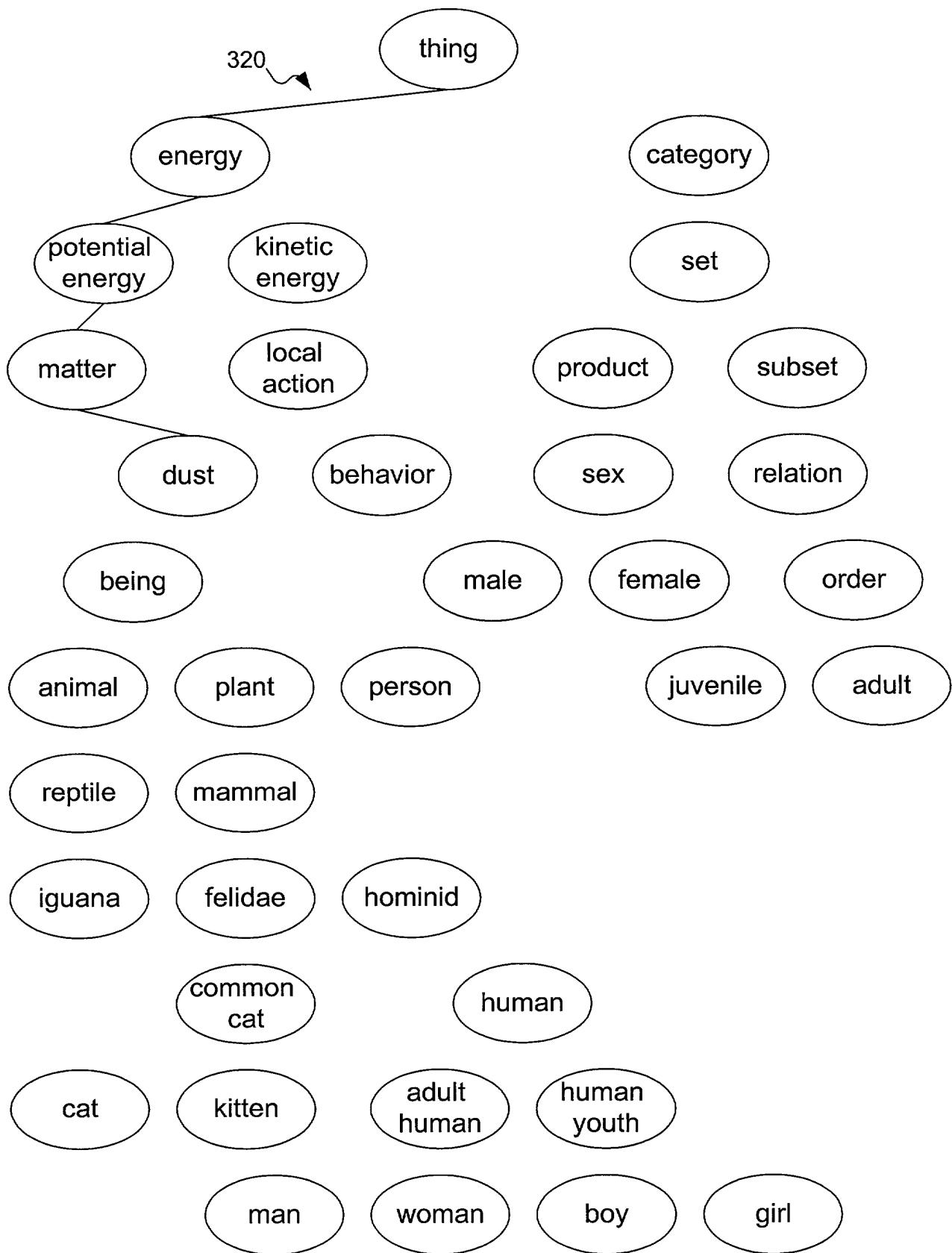


FIG. 3D

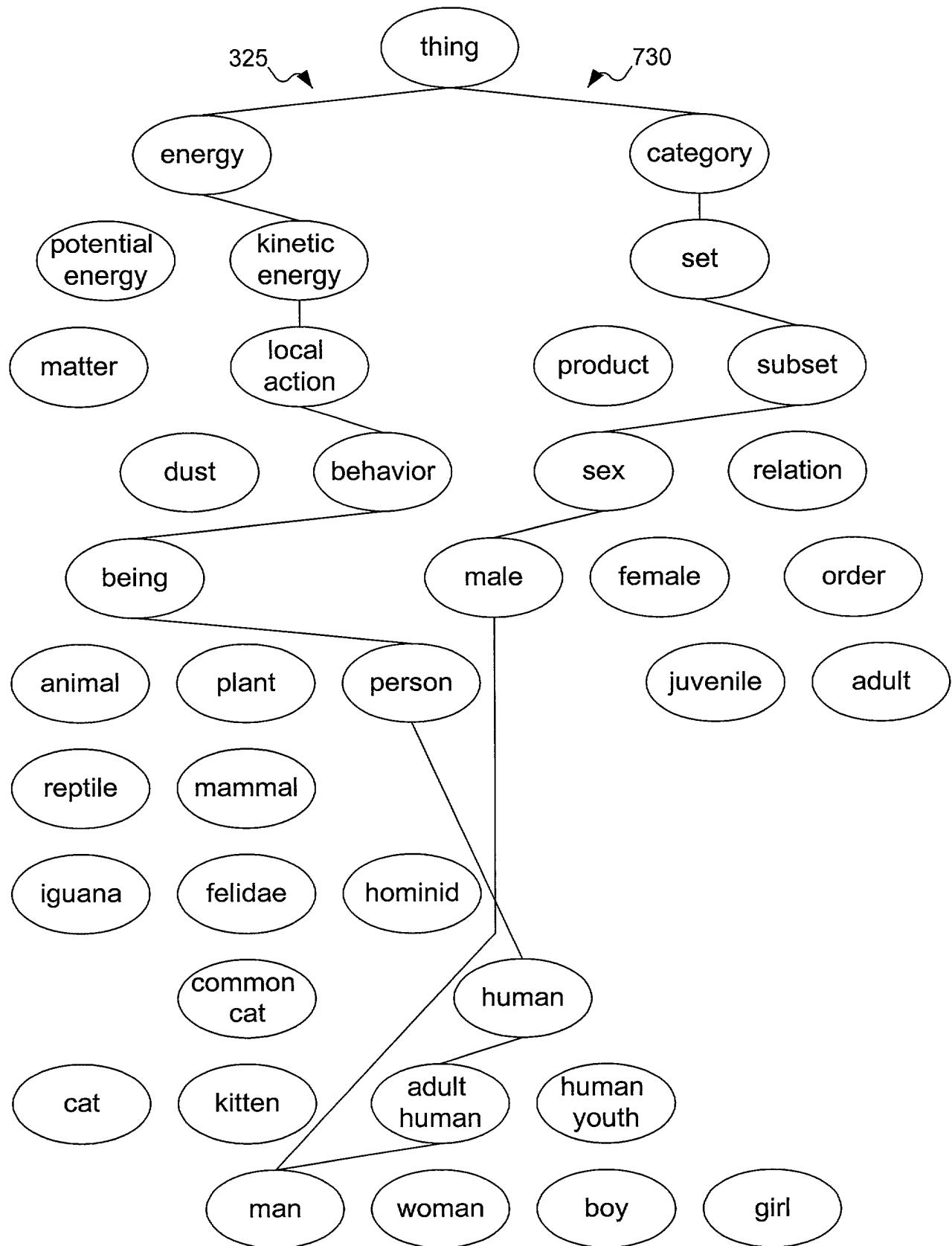


FIG. 3E

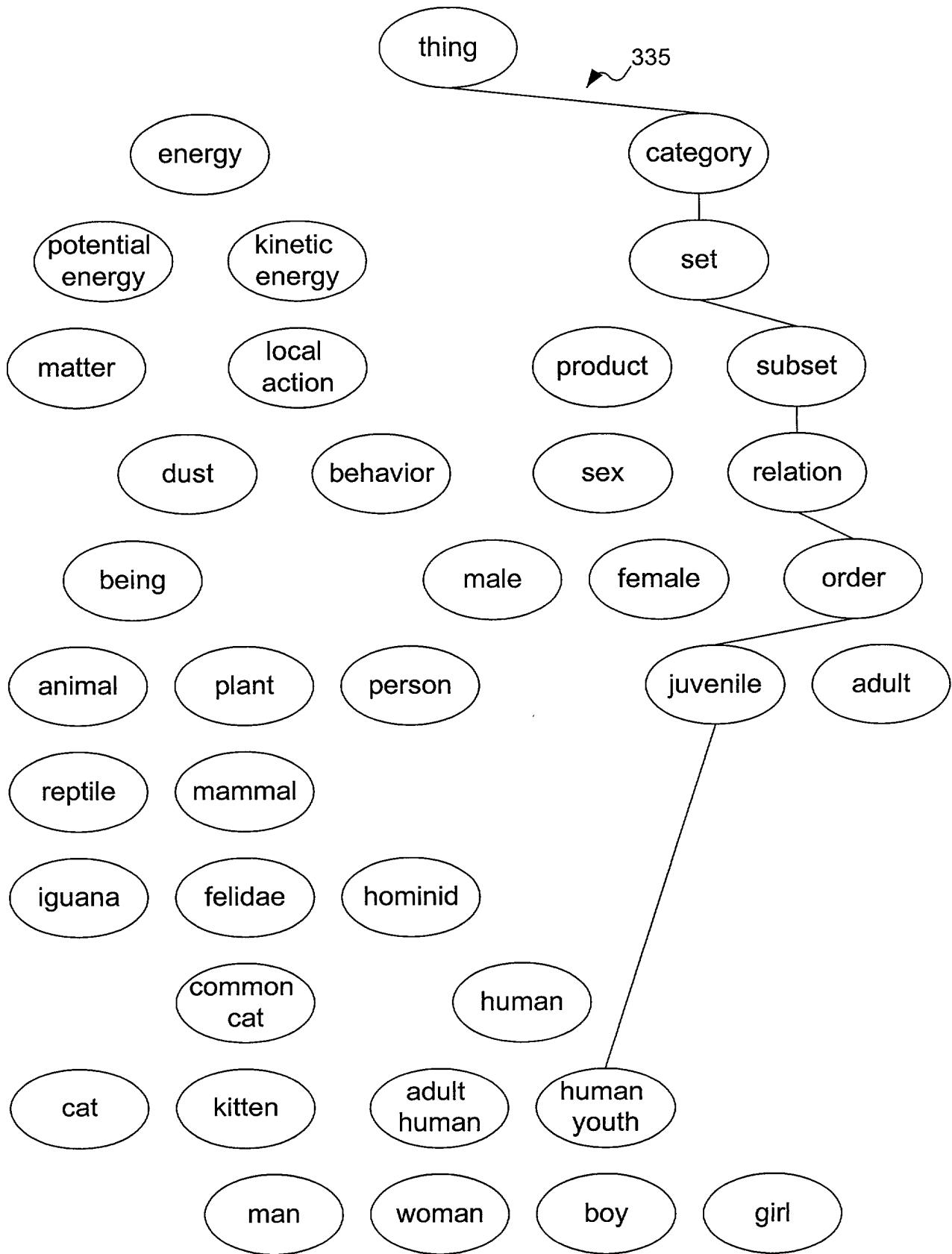


FIG. 3F

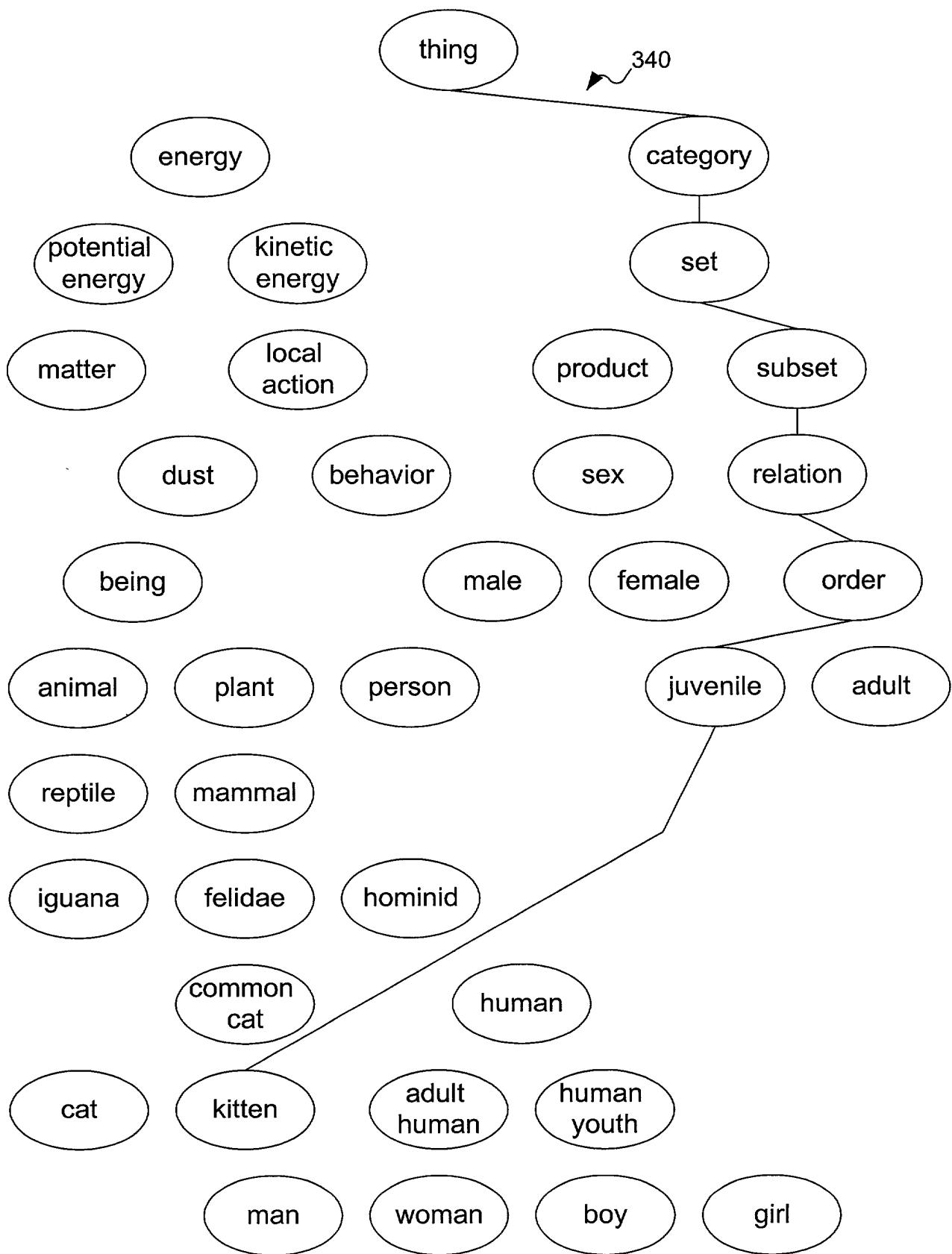
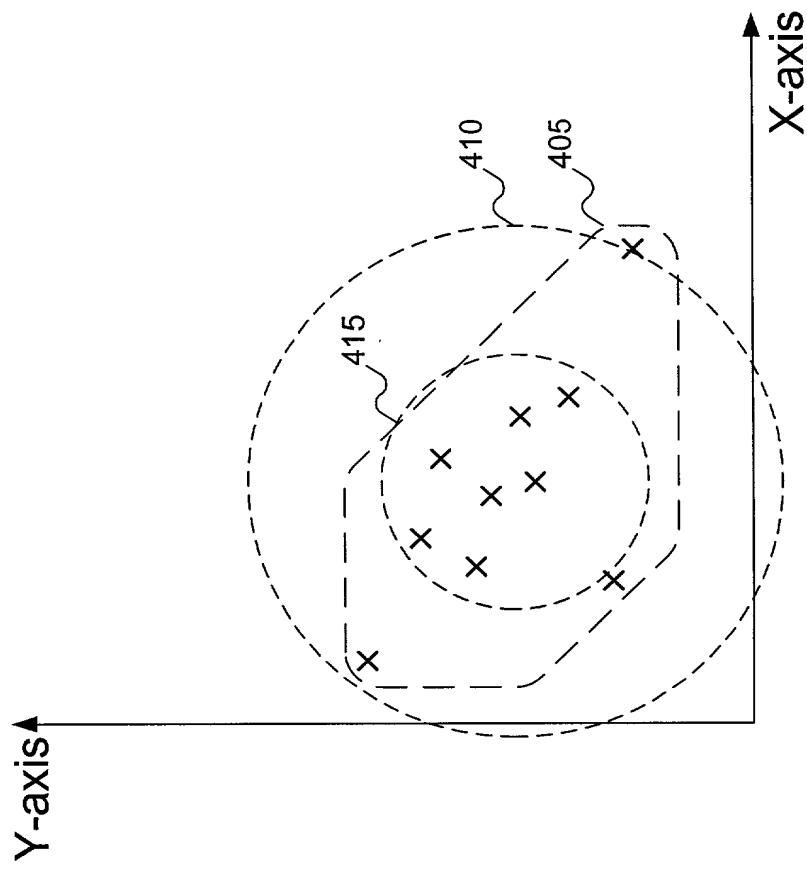


FIG. 3G

FIG. 4



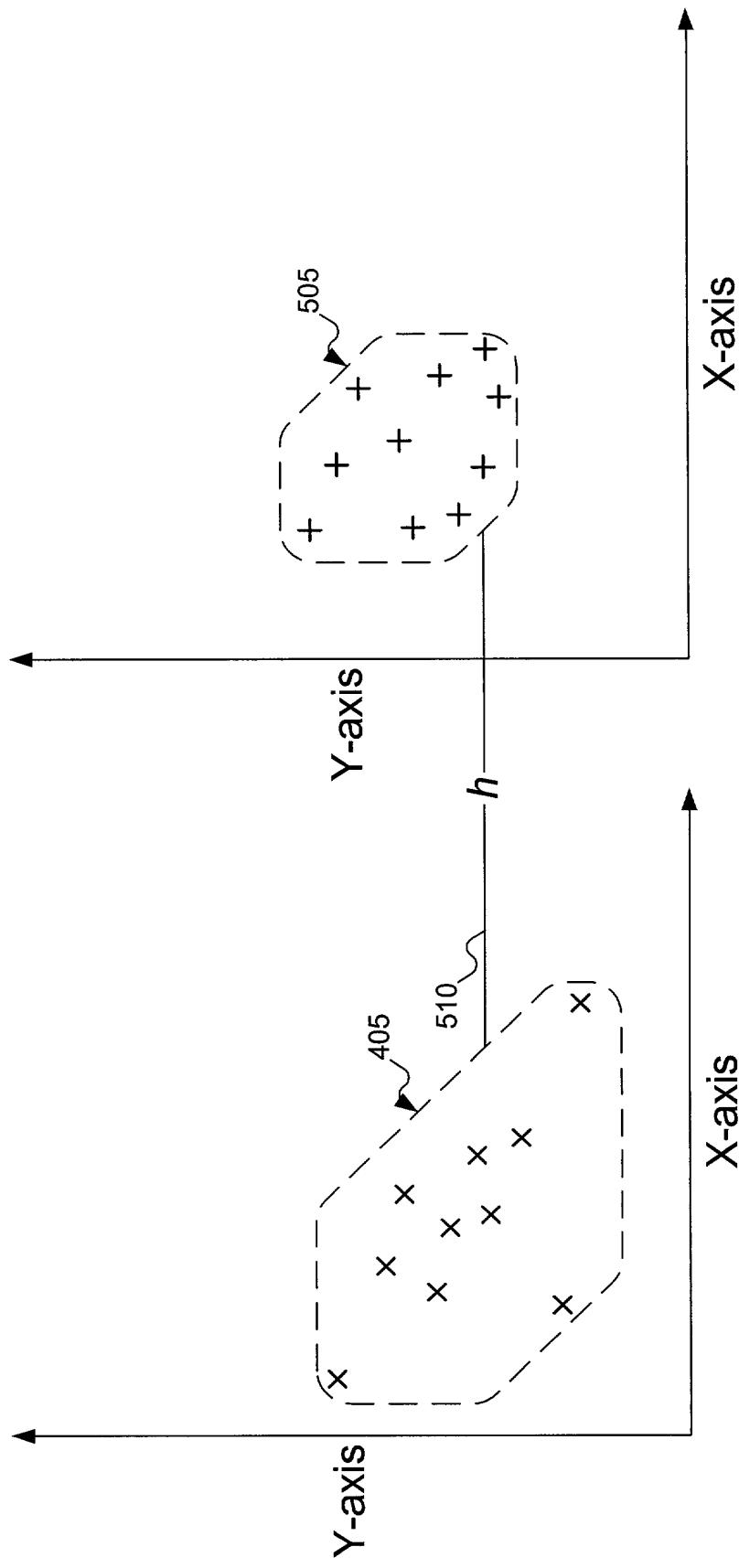


FIG. 5

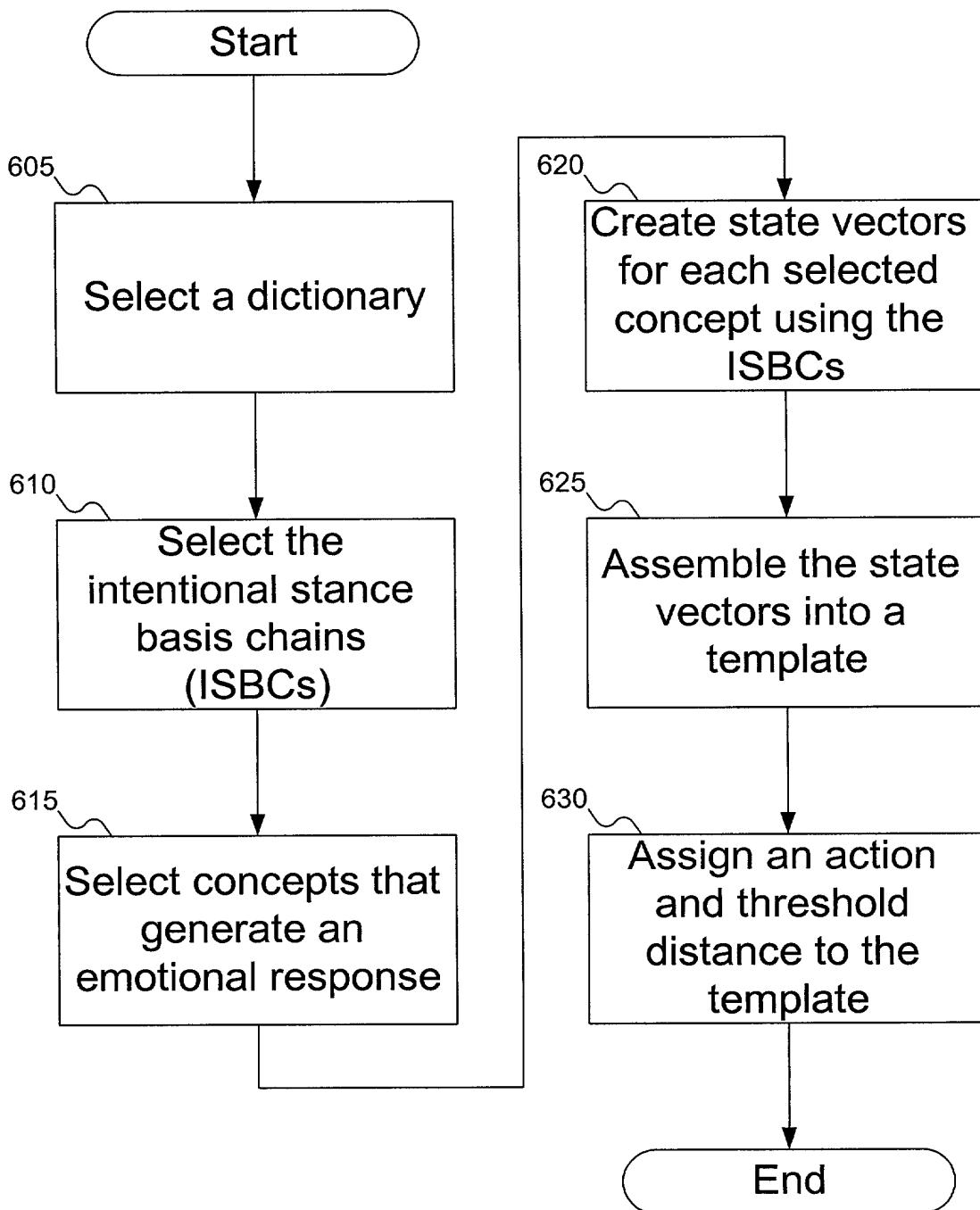


FIG. 6

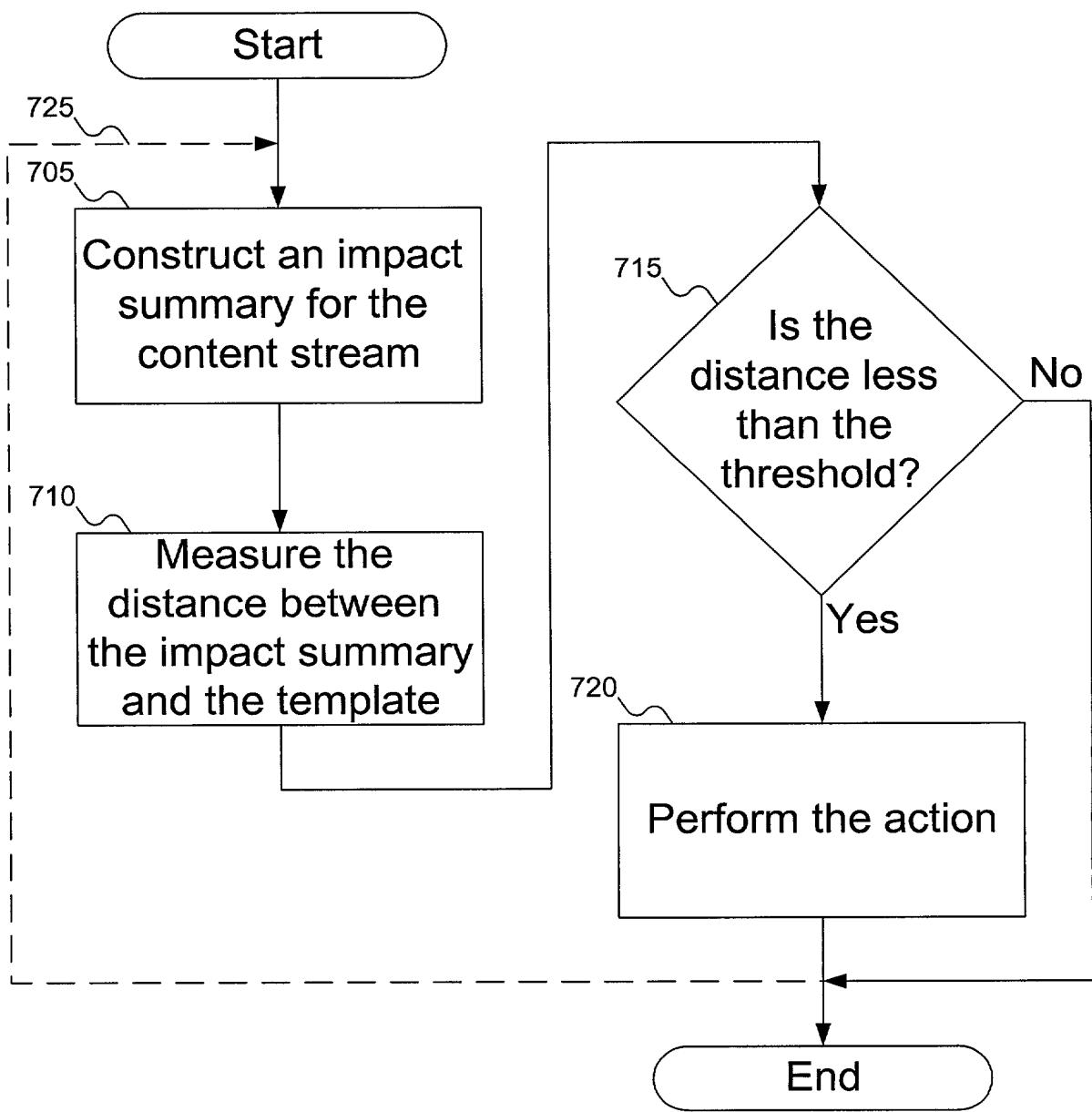


FIG. 7

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **INTENTIONAL STANCE CHARACTERIZATION OF A GENERAL CONTENT STREAM OR REPOSITORY**, the specification of which:

[x] is attached hereto.

[] was filed on _____ as
Application Serial No. _____

[] and was amended on _____
(if applicable)

[] with amendments through _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Sec. 119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed: NONE

Prior Foreign Application(s)	Priority Claimed			
(Number)	(Country)	(Day/Month/Year Filed)	[] Yes	[] No

I hereby claim the benefit under Title 35, United States Code, Sec. 119(e) of any United States provisional application listed below: NONE

Provisional Application No.

Filing Date

I hereby claim the benefit under Title 35, United States Code, Sec. 120 of any United States application(s), or Sec. 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, Sec. 112. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(App. Serial No.)

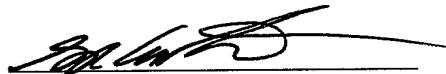
(Filing Date)

(Status -patented, pending, etc.)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor: Stephen R. Carter

Inventor's signature:



8/3/00
(Date)

Residence: Spanish Fork, Utah

Citizenship: U.S.A.

Post Office address: 428 South Nebo Drive
Spanish Fork, Utah 84660

Full name of second co-inventor: Delos C. Jensen

Inventor's signature:



8/31/00
(Date)

Residence: Orem, Utah
Citizenship: U.S.A.
Post Office address: 635 North 1250 East
Orem, Utah 84606

PATENT APPLICATION
Attorney's Do. No. 6647-15

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Stephen R. Carter and Delos C. Jensen

Serial No.

Filed:

For: INTENTIONAL STANCE CHARACTERIZATION OF A GENERAL CONTENT
STREAM OF REPOSITORY

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

POWER OF ATTORNEY BY ASSIGNEE OF ENTIRE INTEREST
AND REVOCATION OF PRIOR POWERS

I, Ryan Richards, Associate General Counsel and Corporate Secretary, of NOVELL,
INC., a Delaware corporation, having a place of business at 1800 South Novell Place, Provo,
Utah 84606, assignee of the entire right, title and interest of the above-described U.S. patent
application, by the assignment submitted under separate cover for recordal (copy enclosed),
represent that I am empowered to sign on behalf of assignee.

As assignee of the above identified application, all powers of attorney previously
given are hereby revoked and the following attorneys and/or patent agents are hereby
appointed to prosecute and transact all business in the Patent and Trademark Office
connected therewith:

Customer No. 20575

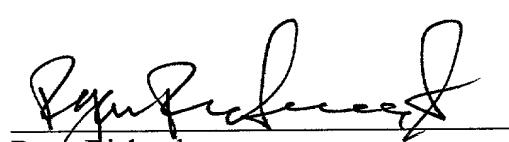
<u>Attorney Name</u>	<u>Registration No.</u>
Jerome S. Marger	26,480
Alexander C. Johnson, Jr.	29,396
Alan T. McCollom	28,881
James G. Stewart	32,496
Glenn C. Brown	34,555
Stephen S. Ford	35,139
Julie L. Reed	35,349
Gregory T. Kavounas	37,862
Scott A. Schaffer	38,610
Joseph S. Makuch	39,286
James E. Harris	40,013
Graciela G. Cowger	42,444
Ariel Rogson	43,054
Craig R. Rogers	43,888

Direct all telephone calls to Alexander C. Johnson, Jr. at (503) 222-3613 and send all correspondence to:

Marger Johnson & McCollom, P.C.
1030 S.W. Morrison Street
Portland, Oregon 97205

NOVELL, INC.

Date: 8/30/00



Ryan Richards

Associate General Counsel and Corporate Secretary